

# Notice No. 10

## Rules and Regulations for the Classification of Ships, July 2014

The status of this Rule set is amended as shown and is now to be read in conjunction with this and prior Notices. Any corrigenda included in the Notice are effective immediately.

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Amendments to	Effective date
Part 1, Chapter 2, Section 2	1 July 2015
Part 1, Chapter 3, Sections 1, 2, 4, 5, 6, 7 & 8	1 July 2015
Part 3, Chapter 1, Section 5	1 July 2015
Part 3, Chapter 2, Sections 1 & 3	1 July 2015
Part 3, Chapter 4, Section 5	1 July 2015
Part 3, Chapter 5, Sections 2 & 3	1 July 2015
Part 3, Chapter 6, Sections 2 & 3	1 July 2015
Part 3, Chapter 8, Section 1	1 July 2015
Part 3, Chapter 9, Section 5	1 July 2015
Part 3, Chapter 11, Section 2	1 July 2015
Part 3, Chapter 16, Section 8	1 July 2015
Part 4, Chapter 2, Section 12	1 July 2015
Part 4, Chapter 7, Section 3	1 July 2015
Part 4, Chapter 8, Section 2	1 July 2015
Part 4, Chapter 9, Sections 1, 2 & 12	1 July 2015
Part 4, Chapter 11, Section 2	1 July 2015
Part 7, Chapter 5, Section 5	1 July 2015

## Part 1, Chapter 2

### Classification Regulations

Effective date 1 July 2015

#### ■ Section 2

##### Character of classification and class notations

##### 2.1 Definitions

**2.1.9 Special features notation.** A notation indicating that the ship incorporates special features which significantly affect the design, see Table 2.2.2.

(Part only shown)

**Table 2.2.2 Special features notations**

Special features notation	Description	See also
<del>E.C.</del> <b>CC</b>	Assigned where structures are fitted with an approved corrosion control system	Chapter 3
<del>Helicopter Landing Area</del> <b>Helideck</b>	<del>Assigned where a helicopter landing area is provided</del> Assigned where a designated helicopter landing platform or other deck area with fire-fighting appliances and other equipment necessary for the safe operation of helicopters are provided.	Pt 3, Ch 9,5
<b>Occasional Helicopter Landing Area</b>	Assigned where an area on a ship designated for occasional or emergency landing of helicopters is provided.	Pt 3, Ch 9,5
<b>Hold (No(s)) ... may be empty at draughts not (less than) (exceeding) ...m</b>	Assigned where particular loading arrangements have been specially considered	Pt 4, Ch 7

## Part 1, Chapter 3

### Classification Regulations

Effective date 1 July 2015

#### ■ Section 1

##### General

##### 1.5 Definitions

**1.5.10 Enclosed space.** An enclosed space is any place of an enclosed nature where there is a risk of death or serious injury from hazardous substances or dangerous conditions. Examples include, but are not limited to: boilers, pressure vessels, cargo spaces (cargo holds or cargo tanks), cargo space stairways, ballast tanks, double bottoms, double hull spaces, fuel oil tanks, lube oil tanks, sewage-tanks, pump-rooms, compressor rooms, cofferdams, void spaces, duct keels, inter-barrier spaces, engine crankcases, excavations and pits.

*Existing paragraphs 1.5.10 to 1.5.28 have been renumbered 1.5.11 to 1.5.29.*

##### 1.6 Preparation for survey and means of access

~~1.6.1 In order to enable the attending Surveyor(s) to carry out the survey, provisions for proper and safe access are to be agreed between the Owner and LR. Tanks and spaces are to be safe for access, be gas free and properly ventilated. Prior to entering a tank, void or enclosed space, it is to be verified that the atmosphere in that space is free from hazardous gas and contains sufficient oxygen.~~

## Part 1, Chapter 3

~~1.6.2 In preparation for survey, thickness measurements and to allow for a thorough examination, all spaces are to be cleaned including removal from surfaces of all loose accumulated corrosion scale. Spaces are to be sufficiently clean and free from water, scale, dirt, oil residues, etc., to reveal corrosion, deformation, fractures, damages or other structural deterioration, as well as the condition of the protective coating. However, those areas of structure whose renewal has already been decided by the owner need only be cleaned and descaled to the extent necessary to determine the limits of renewed areas.~~

~~1.6.3 Sufficient illumination is to be provided to reveal corrosion, deformation, fractures, damages or other structural deterioration.~~

~~1.6.4 Means are to be provided to enable the Surveyor to examine the structure in a safe and practical way. Where the provisions of safety and required access are determined by the Surveyor not to be adequate, then the survey of the space(s) involved is not to proceed.~~

~~1.6.9 Where soft or semi-hard coatings have been applied, safe access is to be provided for the Surveyor to verify the effectiveness of the coating and to carry out an assessment of the conditions of internal structures which may include spot removal of the coating. When safe access cannot be provided, the soft or semi-hard coating is to be removed.~~

~~1.6.10 An oxygen meter, breathing apparatus, lifeline, riding belts with rope and hook and whistles together with instructions and guidelines on their use are to be made available during the survey. For oil tankers and chemical tankers, an explosimeter is to be provided. A safety checklist is also to be provided.~~

1.6.1 In order to enable the attending Surveyor(s) to carry out surveys, provisions for safe access and for surveys are to be agreed between the Owner and LR. Attention is drawn to the applicable recommendations in the IACS PR37 and/or IMO Recommendations For Entering Enclosed Spaces Aboard Ships, Resolution A.1050(27).

1.6.2 Means are to be provided to enable the Surveyor to examine the structure in a safe and practical way. Where the provisions of safety and required access are determined by the Surveyor not to be adequate, then the survey of the space(s) involved is not to proceed.

1.6.3 Spaces are to be made safe for access and survey and are to be sufficiently cleaned, illuminated and ventilated.

1.6.4 In preparation for survey, thickness measurements and to allow for a thorough examination, cleaning is to include removal from surfaces of all loose accumulated corrosion scale. Spaces are to be sufficiently clean and free from water, scale, dirt, and oil residues, etc., to reveal corrosion, deformation, fractures, damages or other structural deterioration, as well as the condition of the protective coating. However, those areas of structure whose renewal has already been decided by the Owner need only be cleaned and descaled to the extent necessary to determine the limits of renewed areas.

1.6.5 Where soft or semi-hard coatings have been applied, safe access is to be provided for the Surveyor to verify the effectiveness of the coating and to carry out an assessment of the conditions of internal structures which may include spot removal of the coating. When safe access cannot be provided, the soft or semi-hard coating is to be removed.

1.6.6 Prior to entering an enclosed space, it is to be verified by a competent person using a calibrated multi gas meter that the atmosphere in that space is free from hazardous gas and contains sufficient oxygen.

1.6.7 Emergency equipment and personnel are to be available in case of an emergency or rescue operation.

1.6.8 Information on procedures, equipment-operating instructions and safety checklists is to be available.

1.6.9 During the survey, ventilation is to be ensured and periodic testing is to be carried out as necessary to verify that the atmosphere remains safe for access.

*Existing paragraphs 1.6.5, 1.6.6, 1.6.7, 1.6.8, 1.6.11, 1.6.12 and 1.6.13 have been renumbered 1.6.10, 1.6.11, 1.6.12, 1.6.13, 1.6.14, 1.6.15 and 1.6.16.*

### 1.7 Thickness measurement at surveys

1.7.4 The Surveyor may require to measure the thickness of the material in any portion of the structure where signs of wastage are evident or wastage is normally found. Any parts of the structure which are found defective or excessively reduced in scantlings are to be made good by materials of the approved scantlings and quality. Attention is to be given to the structure in way of discontinuities. If a corrosion control ~~(cc)~~ **CC** special features notation, as defined in the *Register Book*, is assigned, ~~then~~ surfaces are to be re-coated as necessary.

## Part 1, Chapter 3

### ■ Section 2 Annual Surveys – Hull and machinery requirements

#### 2.2 Annual Surveys

2.2.42 It is the responsibility of the onboard personnel to examine, maintain or renew cargo securing devices and maintain the appropriate certification. Records of inspections, maintenance and renewals, as well as the procedures for accepting, maintaining and repairing or rejecting cargo securing devices are to be kept onboard and made available to the attending Surveyor on request.

*Existing paragraphs 2.2.42 to 2.2.44 have been renumbered 2.2.43 to 2.2.45.*

### ■ Section 4 Docking Surveys and In-water Surveys – Hull and machinery requirements

#### 4.2 Docking Surveys

4.2.10 Where the ~~antifouling~~ anti-fouling system is changed completely, or partial repair is carried out affecting 25 per cent or more of the ~~antifouling~~ anti-fouling system, the coating specification and ~~antifouling~~ anti-fouling system is to be examined by the Surveyor in accordance with ~~IMO Antifouling System Convention~~ the *IMO Convention on the Control of Harmful Anti-fouling Systems on Ships* (AFS 2001) and Chapter 15 of the Rules for Materials.

#### 4.3 In-water Surveys

4.3.9 Where a vessel has an \*IWS notation, the ~~conditions~~ condition of the high ~~resistant~~ resistance paint is to be confirmed at each dry-docking in order that the \*IWS notation can be maintained.

### ■ Section 5 Special Survey – General – Hull requirements

#### 5.3 Examination and testing

5.3.19 Where the special features notation **CCSA** (certified container securing arrangements) is assigned, the Surveyor is to be satisfied as to the efficient condition of:

- (a) Cell guide structure including the connections between vertical cell guides and cross ties.
- (b) Cell guide entry devices.
- (c) Portable frameworks or other forms of structural restraints.
- (d) Fittings attached to the ship structure, with special attention to any signs of leakage in way of tanks or deck and shell plating.
- (e) End connecting pieces for lashings, twist locks and other loose fittings, which are to be examined and verified with the Register, see Pt 3, Ch 14,10.
- (f) ~~All lashings, rods, wire ropes, and chains, together with turn buckles and other tightening devices, which are to be examined and verified with the Register~~ Lashings, rods, wire ropes, and chains together with turn buckles and other tightening devices are to be examined and verified with the Register as far as necessary and practicable in order to be satisfied as to their general condition, see Pt 3, Ch 14,10.
- (g) Lashing wire ropes, which are to be renewed where more than five per cent of the wires are broken, worn or corroded in any length of 10 diameters of the wire rope.
- (h) Chains, which are to be renewed where worn or damaged.

Where renewals are required, the new item is to be of approved type and manufacture. Where test certificates are not available, the item is to be tested in accordance with Pt 3, Ch 14,3.

5.3.20 It is the responsibility of the onboard personnel to examine, maintain or renew cargo securing devices and maintain the appropriate certification. Records of inspections, maintenance and renewals, as well as the procedures for accepting, maintaining and repairing or rejecting cargo securing devices are to be kept onboard and made available to the attending Surveyor on request.

*Existing paragraphs 5.3.20 to 5.3.22 have been renumbered 5.3.21 to 5.3.23.*

## Part 1, Chapter 3

### ■ Section 6 Special Survey – Bulk carriers – Hull requirements

#### 6.4 Overall Survey

6.4.7 Where provided, in association with a corrosion control ~~(e.e.)~~ CC special features notation, as defined in the *Register Book*, the condition of the protective coating or corrosion prevention system of cargo holds is to be examined.

### ■ Section 7 Special Survey – Oil tankers (including ore/oil ships and ore/bulk/oil ships) – Hull requirements

#### 7.4 Overall Survey

7.4.6 Where provided, in association with a corrosion control ~~(e.e.)~~ CC special features notation, as defined in the *Register Book*, the condition of the protective coating or corrosion prevention system of cargo tanks is to be examined.

#### 7.6 Close-up Survey

7.6.2 The Surveyor may extend the Close-up Survey, if deemed necessary, taking into account the maintenance of the tanks under survey, the condition of the corrosion prevention system, and the following:

- (a) Structural arrangements or details which have suffered defects in similar spaces or on similar ships.
- (b) Spaces which have structures approved with reduced scantlings in association with an approved corrosion control system ~~(e.e.)~~.

### ■ Section 8 Special Survey – Chemical tankers – Hull requirements

#### 8.4 Overall Survey

8.4.7 Where provided, in association with a corrosion control ~~(e.e.)~~ CC special features notation, as defined in the *Register Book*, the condition of the protective coating or corrosion prevention system of cargo tanks is to be examined.

#### 8.6 Close-up Survey

8.6.2 The Surveyor may extend the Close-up Survey, if deemed necessary, taking into account the maintenance of the tanks under survey, the condition of the corrosion prevention system, and the following:

- (a) Structural arrangements or details which have suffered defects in similar spaces or on similar ships.
- (b) Spaces which have structures approved with reduced scantlings in association with an approved corrosion control system ~~(e.e.)~~.

## Part 3, Chapter 1

### General

Effective date 1 July 2015

#### ■ Section 5 Information required

##### 5.2 Plans and supporting calculations

5.2.4 Where an **\*IWS** (In-water Survey) notation is to be assigned (see Pt 1, Ch 2,2.3.11), plans and information covering the following items are to be submitted:

- Details showing how rudder pintle and bush clearances are to be measured and how the security of the pintles in their sockets are to be verified with the vessel afloat.
- Details showing how stern bush clearances are to be measured with the vessel afloat.
- Details of high resistant resistance paint, for information only.

5.2.7 Ships that are required to comply with the *Performance Standards for Protective Coatings* of SOLAS Regulation II-1/3-2 and ~~IACS Common Structural Rules~~ are to submit information on the coating specification agreed by the shipyard, the ship owner and the manufacturer, including the coating system selection, surface preparation and coating application and inspection procedure. Corrosion prevention arrangements and coating system specifications are to comply with Chapter 15 of the Rules for Materials.

##### 5.3 Plans to be supplied to the ship

5.3.5 For ships that are required to comply with IMO *Performance Standard for Protective Coatings*, a copy of the Coating Technical File (CTF) is to be kept ~~onboard~~ on board the vessel, see Ch 15 of the Rules for Materials.

## Part 3, Chapter 2

### Materials

Effective date 1 July 2015

#### ■ Section 1 Materials of construction

##### 1.2 Steel

1.2.4 For the application of the requirements of 1.2.2 and 1.2.3, special consideration will be given to steel where  $\sigma_0 \geq 355$  N/mm<sup>2</sup> (36 kgf/mm<sup>2</sup>). Where such steel grades are used in areas which are subject to fatigue loading, the structural details are to be verified using fatigue design assessment methods.

## Part 3, Chapter 2

**Table 2.1.1 Values of  $k_L$**

Specified minimum yield stress in N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	$k_L$
235 (24)	1,0
265 (27)	0,92
315 (32)	0,78
355 (36)	0,72
390 (40)	0,68 (0,66 see Note 3)
460 (47) see Note 3	0,62 see Note 3
<b>NOTES</b> 1. Intermediate values by linear interpolation. 2. For the purpose of calculating hull moment of inertia as specified in Ch 4,5.8.1, $k_L = 1,0$ . 3. Grade only applies to thickness above 50 mm for decks and hatch coamings upper deck, hatch coamings, shear strake, uppermost strake of longitudinal bulkhead and other longitudinal strength members in way of the above structures of container ships. The requirements specified in Ch 3,3 of the Rules for Materials apply, see 1.2.4 and 1.2.5.	

### Section 3

### Corrosion protection

#### 3.2 Prefabrication primers

~~3.2.1 Where a primer is used to coat steel after surface preparation and prior to fabrication, the composition of the coating is to be such that it will have no significant deleterious effect on subsequent welding work and that it is compatible with the paints or other coatings subsequently applied in association with an approved system of corrosion control. Prefabrication primers are to be approved in accordance with Chapter 15 of the Rules for Materials.~~

~~3.2.2 To determine the influence of the primer coating on the characteristics of welds, tests are to be made as detailed in 3.2.3 and 3.2.5.~~

~~3.2.3 Three butt weld assemblies are to be tested using plate material 20 to 25 mm thick. A 'V' preparation is to be used and, prior to welding, the surfaces and edges are to be treated as follows:~~

- ~~(a) Assembly 1 — Coated in accordance with the manufacturer's instructions.~~
- ~~(b) Assembly 2 — Coated to a thickness approximately twice the manufacturer's instructions.~~
- ~~(c) Assembly 3 — Uncoated.~~

~~3.2.4 Tests as follows are to be taken from each test assembly:~~

- ~~(a) Radiographs. These are to have a sensitivity of better than two per cent of the plate thickness under examination, as shown by an image quality indicator.~~
- ~~(b) Photo-macrographs. These may be of actual size and are to be taken from near each end and from the centre of the weld.~~
- ~~(c) Face and reverse bend test. The test specimens are to be bent by pressure or hammer blows round a former of diameter equal to three times the plate thickness.~~
- ~~(d) Impact tests. These are to be carried out at ambient temperature on three Charpy V-notch test specimens prepared in accordance with Ch 2,3 of the Rules for Materials. The specimens are to be notched at the centreline of the weld, perpendicular to the plate surface.~~

~~3.2.5 The tests are to be carried out in the presence of a Surveyor to Lloyd's Register or by an independent laboratory specialising in such work. A copy of the test report is to be submitted, together with radiographs and macrographs.~~

~~3.2.6~~ **3.2.2** Aluminium coatings intended for oil tankers and chemical tankers used in way of the cargo oil tanks, cargo tank deck areas, pumprooms, cofferdams or any other area where oil vapour may accumulate are to be coated using systems containing less than 10 per cent aluminium by weight in the dry film.

#### 3.3 Internal cathodic protection

**3.3.1** The requirements for cathodic protection of internal tanks in Ch 15 of the Rules for Materials are to be complied with. When a cathodic protection system is to be fitted in tanks for the carriage of liquid cargo with flash point not exceeding 60°C, a plan showing details of the locations and attachment of anodes is to be submitted. The arrangements will be considered for safety against fire and explosion aspects only. Impressed current cathodic protection systems are not permitted in any tank.

## Part 3, Chapter 2

### 3.5 External hull protection

3.5.2 Where an impressed current cathodic protection system is fitted, plans showing the proposed layout of anodes and hull penetrations are to be submitted in accordance with Chapter 15 of the Rules for Materials.

3.5.4 Where an \*IWS (In-water Survey) notation is to be assigned, see Pt 1, Ch 2.2.3.11, protection of the underwater portion of the hull is to be provided by means of a suitable high resistant resistance paint applied in accordance with the manufacturer's requirements. Details of the high resistant resistance paint are to be submitted for information in accordance with Chapter 15 of the Rules for Materials.

### 3.6 Application of coatings and alternative means of protection

3.6.1 For ships that are required to comply with IMO Resolution MSC.215(82), *Performance Standards for Protective Coatings (PSPC)*, all dedicated sea-water ballast tanks of all types of ships and double-side skin spaces of bulk carriers are to comply with all of the requirements of the Resolution, see ShipRight Procedure *Anti-Corrosion Systems Notation* and Chapter 15 of the Rules for Materials.

3.6.2 For ships that are required to comply with IMO Resolution MSC.288(87), *Performance Standard for Protective Coatings for Cargo Oil Tanks of Crude Oil Tankers*, all cargo oil tanks are to comply with all of the requirements of the Resolution, see ShipRight Procedure *Anti-Corrosion System Notation* and Chapter 15 of the Rules for Materials.

3.6.3 For ships that are required to comply with the IMO Resolution MSC.289(87), *Performance Standard for Alternative Means of Corrosion Protection for Cargo Oil Tanks of Crude Oil Tankers*, by application of Corrosion Resistant Steel corrosion resistant steel, see Ch 3.1.3 of the Rules for Materials, all cargo oil tanks are to comply with all of the requirements of the Resolution, see ShipRight Procedure *Anti-Corrosion System Notation* and Chapter 15 of the Rules for Materials.

3.6.4 For ships that are required to comply with IMO Resolution MSC.244(83), *Adoption of Performance Standard for Protective Coatings for Void Spaces on Bulk Carriers and Oil Tankers*, all void spaces are to comply with all of the requirements of the Resolution, see ShipRight Procedure *Anti-Corrosion System Notation* and Chapter 15 of the Rules for Materials.

3.6.5 For ships that are not required to comply with the IMO Resolution MSC.215(82), *Performance Standards for Protective Coatings*, all sea-water ballast spaces having boundaries formed by the hull envelope are to have an efficient protective coating, epoxy or equivalent, applied in accordance with the manufacturer's recommendations, see ShipRight Procedure *Protective Coatings in Water Ballast Tanks (PCWBT)* and Chapter 15 of the Rules for Materials.

## Part 3, Chapter 4

### Longitudinal Strength

Effective date 1 July 2015

#### ■ Section 5

#### Hull bending strength

### 5.8 Hull moment of inertia

5.8.1 The hull midship section moment of inertia about the transverse neutral axis is to be not less than the following using the maximum total bending moment, sagging or hogging:

$$I_{\min} = \frac{3L(|\overline{M}_s| + M_w)}{k_L \sigma} \times 10^{-5} \quad \text{m}^4$$

where values of  $\sigma$  are given in 5.6.1.

In addition for vessels with  $L \geq 90$  m the hull midship section moment of inertia is not to be less than the following:

$$I_{\min} = 3C_1 L^3 B(C_b + 0,7) \times 10^{-8} \quad \text{m}^4$$

where  $C_1$  is given in 5.2.1.



# Part 3, Chapter 5

## Fore End Structure

Effective date 1 July 2015

### ■ Section 2 Deck structure

#### 2.2 Deck plating

(Part only shown)

**Table 5.2.1 Strength/weather deck plating forward (excluding forecastle deck)**

##### NOTES

1. The taper thickness is to be determined from Table 3.2.1 in Chapter 3.
2. For taper area requirements, see Table 3.2.1 in Chapter 3.
3. For thickness of upper deck plating in way of the cargo and fore peak tanks of oil tankers or ore carriers, see *also* Pt 4, Ch 9, Ch 10 or Ch 11, as applicable.
4. The exposed deck taper thickness is to extend into a forecastle or bridge for at least one-third of the breadth of the ship from the superstructure end bulkhead.
5. The taper requirements from Table 3.2.1 in Chapter 3 do not apply to container ships or open ship types, see Ch 4,2.3, where the requirements of Pt 4, Ch 8,3.2 are applicable, nor to fast cargo ships where the requirements of Pt 4, Ch 1,3 are applicable. See *also* Ch 4,5 for hull section modulus requirement away from the midship area.

#### 2.3 Deck stiffening

(Part only shown)

**Table 5.2.3 Strength/weather deck longitudinals forward**

##### NOTES

1. For area taper requirements, see *also* Table 3.2.1 in Chapter 3.
2. Where weather decks are intended to carry deck cargo and the loading is in excess of  $8,5 \text{ kN/m}^2$  ( $0,865 \text{ tonne-f/m}^2$ ), the scantlings of longitudinals may be required to be increased to comply with the requirements for location (1) in Table 1.4.4 in Pt 4, Ch 1 using the equivalent design head, for specified cargo loadings, for weather decks given in Table 3.5.1 in Chapter 3.
3. For the scantlings of deck longitudinals forward in way of the cargo tanks of oil tankers (see 1.1.4) or ore carriers, see *also* Pt 4, Ch 9, Ch 10 or Ch 11, as applicable.
4. The thickness of flat bar longitudinals situated outside the line of openings is to be not less than the following:  
  
(a)  $t = \frac{d_w}{18 \sqrt{k_L}}$  mm  
  
where longitudinal continuous through bulkhead  
  
(b)  $t = \frac{d_w}{15 \sqrt{k_L}}$  mm
5. The web depth of longitudinal,  $d_w$ , is to be not less than 60 mm.
6. The taper requirements from Table 3.2.1 in Chapter 3 do not apply to container ships or open ship types, see Ch 4,2.3, where the requirements of Pt 4, Ch 8,3.2 are applicable, nor to fast cargo ships where the requirements of Pt 4, Ch1,3 are applicable. See *also* Ch 4,5 for hull section modulus requirement away from the midship area.

## Part 3, Chapter 5

### ■ Section 3 Shell envelope plating

#### 3.3 Stem

(Part only shown)

**Table 5.3.1 Shell plating forward**

##### NOTES

1. For ships where  $L \leq 70$  m this thickness may be reduced by 1 mm, but it is to be not less than 6 mm.
2. The taper thickness is to be determined from Table 3.2.1 in Chapter 3.
3. For thickness of shell plating in way of the cargo and fore peak tanks of oil tankers or ore carriers, see *also* Pt 4, Ch 9, Ch 10 or Ch 11, as appropriate.
4. In offshore supply ships the thickness of side shell is to be not less than 9 mm.
5. For trawlers and fishing vessels, see Pt 4, Ch 6,5.
6. For fast cargo ships, see Pt 4, Ch 1,3.
7. For oil tankers the thickness is also to be in accordance with Pt 4, Ch 9,4.3.3.
8. The taper requirements from Table 3.2.1 in Chapter 3 do not apply to container ships or open ship types, see Ch 4,2.3, where the requirements of Pt 4, Ch 8,3.2 are applicable, nor to fast cargo ships where the requirements of Pt 4, Ch1,3 are applicable. See *also* Ch 4,5 for hull section modulus requirement away from the midship area.

## Part 3, Chapter 6

### Aft End Structure

Effective date 1 July 2015

### ■ Section 2 Deck structure

#### 2.2 Deck plating

(Part only shown)

**Table 6.2.1 Strength/weather deck plating aft (excluding poop deck)**

##### NOTES

1. The taper thickness is to be determined from Table 3.2.1 in Chapter 3.
2. For taper area requirements, see Table 3.2.1 in Chapter 3.
3. For thickness of upper deck plating in way of the cargo tanks of oil tankers or ore carriers, see *also* Pt 4, Ch 9, Ch 10 or Ch 11.
4. The exposed weather deck taper thickness is to extend into a poop or bridge for at least one-third of the breadth of the ship from the superstructure end bulkhead.
5. The taper requirements from Table 3.2.1 in Chapter 3 do not apply to container ships or open ship types, see Ch 4,2.3, where the requirements of Pt 4, Ch 8,3.2 are applicable, nor to fast cargo ships where the requirements of Pt 4, Ch 1,3 are applicable. See *also* Ch 4,5 for hull section modulus requirement away from the midship area.

## Part 3, Chapter 6

### 2.3 Deck stiffening

(Part only shown)

**Table 6.2.3 Strength/weather deck longitudinals aft**

#### NOTES

1. For taper area requirements, see Table 3.2.1 in Chapter 3.
2. Where weather decks are intended to carry deck cargo and the loading is in excess of  $8,5 \text{ kN/m}^2$  ( $0,865 \text{ tonne-f/m}^2$ ) the scantlings of longitudinals are also to comply with the requirements for location (1) in Table 1.4.4 in Pt 4, Ch 1 using the equivalent design head, for specified cargo loadings, for weather decks given in Table 3.5.1 in Chapter 3.
3. For the scantlings of deck longitudinals aft in way of the cargo tanks of oil tankers (see 1.1.4) or ore carriers, see also Pt 4, Ch 9, Ch 10 or Ch 11, as applicable.
4. The thickness of flat bar longitudinals, situated outside the line of openings is to be not less than the following:  
(a)  $t = \frac{d_w}{18\sqrt{k_L}}$  mm  
where longitudinal continuous through bulkhead  
(b)  $t = \frac{d_w}{15\sqrt{k_L}}$  mm  
where longitudinal cut at bulkhead
5. The web depth of longitudinal,  $d_w$ , to be not less than 60 mm.
6. The taper requirements from Table 3.2.1 in Chapter 3 do not apply to container ships or open ship types, see Ch 4.2.3, where the requirements of Pt 4, Ch 8.3.2 are applicable, nor to fast cargo ships where the requirements of Pt 4, Ch1,3 are applicable. See also Ch 4,5 for hull section modulus requirement away from the midship area.

## ■ Section 3 Shell envelope plating

### 3.3 Bottom shell and bilge

(Part only shown)

**Table 6.3.1 Shell plating aft**

#### NOTES

1. For ships where  $L \leq 70 \text{ m}$  this thickness may be reduced by 1 mm, but it is to be not less than 6 mm.
2. The taper thickness is to be determined from Table 3.2.1 in Chapter 3.
3. For thickness of shell plating in way of the cargo tanks of oil tankers or ore carriers, see also Pt 4, Ch 9, Ch 10 or Ch 11, as appropriate.
4. In offshore supply ships the thickness of side shell is to be not less than 9 mm.
5. For trawlers and fishing vessels, see Pt 4, Ch 6.5.
6. For oil tankers the thickness is also to be in accordance with Pt 4, Ch 9.4.3.3.
7. The taper requirements from Table 3.2.1 in Chapter 3 do not apply to container ships or open ship types, see Ch 4.2.3, where the requirements of Pt 4, Ch 8.3.2 are applicable, nor to fast cargo ships where the requirements of Pt 4, Ch1,3 are applicable. See also Ch 4,5 for hull section modulus requirement away from the midship area.

## Part 3, Chapter 8

### Superstructures, Deckhouses and Bulwarks

Effective date 1 July 2015

#### ■ Section 1 General

##### 1.2 Symbols

(Part only shown)

1.2.1 The following symbols and definitions are applicable to this Chapter, unless otherwise stated:

$L$ ,  $B$ ,  $T$  and  $C_b$  as defined in Ch 1,6.1

$L_2$  = length of ship, in metres, but need is not to be taken greater than 250 m or less than 50 m

$L_3$  = length of ship, in metres, but need is not to be taken greater than 300 m

## Part 3, Chapter 9

### Special Features

Effective date 1 July 2015

#### ■ Section 5 Helicopter landing areas

##### 5.1 General

~~5.1.1 Where it is proposed to provide a helicopter landing area on the ship, the structure is to be designed to suit the largest helicopter type which it is intended to use.~~

~~5.1.2~~ **5.1.1** Attention is drawn to the requirements and guidance of National and other Authorities concerning the construction of helicopter landing platforms and the operation of helicopters as they affect the ship. These include SOLAS Chapter II-2 Regulation 18 and Chapter III Regulation 28 Reg.II-2/18 and Reg.III/28 as applicable. Guidance on the provision and operation of helicopter landing or winching facilities may be drawn from international standards such as well as the *International Chamber of Shipping (ICS) Guide to Helicopter/Ship Operations* and the *International Aeronautical Search and Rescue Manual (IAMSAR)* and CAP437 Standards for Offshore Helicopter Landing Areas.

**5.1.2** Where the requirements of this Section have been adhered to for a designated helicopter landing platform or other deck area and fire-fighting appliances and other equipment necessary for the safe operation of helicopters are provided, the ship will be eligible for the special features notation **Helideck**. See also SOLAS Reg.II-2/18.

**5.1.3** Where the requirements of this Section have been complied with for an area on a ship designated for occasional or emergency landing of helicopters, the ship will be eligible for the special features notation **Occasional Helicopter Landing Area**, see SOLAS Reg.II-2/18.2.2.

**5.1.4** The structure is to be designed to accommodate the largest helicopter type which it is intended to use.

~~5.1.3~~ **5.1.5** Plans are to be submitted showing the proposed scantlings and arrangements of the structure. The type, size and weight and footprint of helicopters to be used are also to be indicated. Details of the helicopter types to be used are to be included in the Loading Manual (see Ch 4,8.2) and be contained in a notice displayed on the helicopter landing deck.

*Existing paragraph 5.1.4 has been renumbered 5.1.6.*

## Part 3, Chapter 11

### Closing Arrangements for Shell, Deck and Bulkheads

Effective date 1 July 2015

#### ■ Section 2 Steel hatch covers

##### 2.3 Load model

(Part only shown)

2.3.3 The horizontal weather design pressure, in  $\text{kN/m}^2$ , for determining the scantlings of outer edge girders (skirt plates) of weather deck hatch covers and of hatch coamings is:

$$p_A = a \cdot c \cdot (b \cdot q_L \cdot f - z) \text{ kN/m}^2$$

## Part 3, Chapter 16

### ShipRight Procedures for the Design, Construction and Lifetime Care of Ships

Effective date 1 July 2015

#### ■ Section 8 Corrosion protection of internal tanks and spaces

##### 8.1 Protective coating systems in dedicated sea-water ballast tanks and double-side skin spaces – ShipRight Notations ACS(B) or ACS(B,D)

8.1.1 For ships that are required to comply with IMO Resolution MSC.215(82), *Performance Standards for Protective Coatings (PSPC)*, all dedicated sea-water ballast tanks for all ship types and double-side skin spaces of bulk carriers are to have type approved coating systems applied according to in accordance with ShipRight Procedure *Anti-Corrosion Systems Notation*, see Chapter 15 of the Rules for Materials and Pt 1, Ch 2,2.3.17 for the list of ShipRight ACS notations.

8.1.2 **ShipRight ACS(B)** or **ShipRight ACS(B,D)** will be entered in Column 4 of the ~~Register Book~~ **Register Book** to indicate that the ship's sea water ballast tanks and double-side skin spaces of bulk carriers are coated with approved coating systems according to IMO Resolution MSC.215(82), *Performance Standards for Protective Coatings*.

##### 8.2 Protective coating systems in the cargo oil tanks of crude oil tankers – ShipRight Notation ACS(C)

8.2.1 For ships that are required to comply with IMO Resolution MSC.291(87), *Adoption of Amendments to the International Convention for the Safety of Life at Sea, 1974* 1974, as amended, Owners may request to receive the optional notation **ShipRight ACS(C)**, which indicates that the cargo oil tanks are protected in compliance with IMO Resolution MSC.288(87), *Performance Standard for Protective Coatings for Cargo Oil Tanks of Crude Oil Tankers (PSPC-COT)* and are to have type approved coating systems applied in accordance with, see ShipRight Procedure *Anti-Corrosion System Notation* and Ch 15 of the Rules for Materials.

8.2.3 When in compliance with IMO Resolution MSC.291(87), but the **ShipRight ACS(C)** notation is not requested, this compliance may be indicated on the applicable certification, see Ch 15 of the Rules for Materials.

##### 8.3 Alternative means of corrosion protection for cargo oil tanks in of crude oil tankers – ShipRight notation ACS(C\*)

8.3.1 For ships that are required to comply with the IMO Resolution MSC.291(87), *Adoption of Amendments to the International Convention for the Safety of Life at Sea, 1974*, as amended, Owners may request to receive the optional notation **ShipRight ACS(C\*)**, which indicates that all cargo tanks are protected in accordance with IMO Resolution MSC.289(87) *Performance Standard for Alternative Means of Corrosion Protection for Cargo Oil Tanks of Crude Oil Tankers*, by application of ~~Corrosion Resistant Steel~~ corrosion resistant steel, see Ch 3,1.3 of the Rules for Materials and ShipRight Procedure *Anti-Corrosion System Notation*.

## Part 4, Chapter 2

### Ferries, Roll on–Roll off Ships and Passenger Ships

Effective date 1 July 2015

Existing Section 12 has been deleted in its entirety.

#### ■ Section 12 External glass balustrades

##### 12.1 General

12.1.1 Attention is drawn to relevant requirements of National and International Standards concerning the construction of barriers using glass, as well as applicable statutory regulations for the Protection of Crew, see the *International Convention on Load Lines*, 1966 and its Protocol of 1988.

12.1.2 The requirements of this Section apply solely to external glass balustrades. External glass balustrades are barriers constructed with glass that are used on exposed decks.

##### 12.2 Design considerations

12.2.1 External glass balustrades should not be situated in areas deemed essential for the operation of the ship. Such areas include mooring decks, lifeboat decks, external muster stations and in the vicinity of davits. Where external glass balustrades are not to be used, more traditional bulwarks or guard rails are to be fitted in accordance with Pt 3, Ch 8,5.

12.2.2 External glass balustrades are to be designed to resist the most unfavourable anticipated loads within service, including weather loads or personnel loads without unacceptable deflection. Detailed plans and calculations are to be submitted clearly indicating the position, arrangement and the anticipated loads for all external glass balustrades.

12.2.3 External glass balustrades are to be not less than 1,0 m in height.

12.2.4 External glass balustrades are to provide water freeing areas in accordance with Pt 3, Ch 8,5.3.

12.2.5 Laminated toughened safety glass is to be used for the glazing of all external glass balustrades.

12.2.6 In general openings should not be greater than 76 mm unless required for water freeing. Openings for water freeing are not to be greater than 230 mm.

12.2.7 Consideration should be given to minimising the possibility of surface deterioration of the balustrade glass infill panels in service by means of suitable edge protection or finishes.

12.2.8 The total horizontal deflection of external glass balustrades is not to exceed 25 mm when subject to the anticipated loads specified in 12.3 or 12.4.

12.2.9 Special consideration may be given to external glass balustrades that are not constructed in accordance with this Section.

##### 12.3 Weather design loads

12.3.1 External glass balustrades are to be designed to resist the anticipated weather loadings dependent on their location specified in Table 2.11.2. It is recommended that the equivalent monolithic thickness of the glass infill panels be derived through direct calculations using the design pressures given in Table 2.11.2 and a safety factor of 2 on the characteristic failure strength of toughened safety glass. The equivalent laminated toughened safety glass thickness can then be obtained in accordance with Pt 3, Ch 11,6.5.24.

##### 12.4 Personnel design loads

12.4.1 External glass balustrades are to be designed to resist the most unfavourable anticipated personnel loads, which are to be specified by the designer. The specified personnel loads are to be not less than 1,5 times the commensurate loads specified in *EN 1991-1-1:2002 Eurocode 1: Actions on structures – Part 1-1: General actions – Densities, self-weight, imposed loads for buildings*.

## Part 4, Chapter 2

### 12.5 Balustrade stanchions

12.5.1 External glass balustrades are to be fitted with fixed stanchions of adequate strength to resist the anticipated loads imposed between stanchions specified in 12.3 and 12.4 using a bending stress coefficient not greater than 0,6.

### 12.6 Balustrade top rail

12.6.1 External glass balustrades are to be fitted with a continuous top rail.

12.6.2 The top rail is to be sufficiently stiff so as not to permanently deflect when subject to the personnel loads specified in 12.4.

12.6.3 The top rail is to be sufficiently stiff so as not to deflect more than  $L_b/96$  when subject to the personnel loads specified in 12.4 where

$L_b$  = span of top rail between stanchions, in m.

12.6.4 The top rail minimum section modulus is to be greater than:

$$Z = \frac{141 * q_k * L_b^2}{f_{\sigma} \sigma_o} \text{ cm}^3$$

where

$L_b$  = span of top rail between stanchions, in m.

$q_k$  = line load on top rail, in kN/m, in accordance with 12.4 and to be taken not less than 1 kN/m.

$\sigma_o$  = specified minimum yield stress in  $\text{N/mm}^2$ .

$f_{\sigma}$  = bending stress coefficient not to be taken greater than 0,6.

### 12.7 Impact Resistance and Containment

12.7.1 External glass balustrades are to be subject to a prototype pendulum impact test in accordance with *EN 13049:2003 Windows — Soft and heavy body impact — Test method, safety requirements and classification* or an equivalent National or International Standard utilising a drop height of not less than 1,5m. The test specimens including the retaining arrangements should be the same as the finished installation.

## Part 4, Chapter 7

### Bulk Carriers

Effective date 1 July 2015

#### ■ Section 3 Longitudinal strength

#### 3.4 Flooded conditions

3.4.1 For the relevant loading conditions specified in Pt 3, Ch 4.5.3 and 5.4, each cargo hold is to be considered individually flooded up to the equilibrium waterline, ~~except that cargo holds of double skin construction of not less than 1000 mm breadth at any location within the hold length, measured perpendicular to the side shell need not be considered flooded.~~ The shear forces and still water bending moments are to be calculated for the most severe flooded conditions which will significantly load the ship's structure. Harbour conditions, docking conditions afloat, loading and unloading transitory conditions in port and loading conditions encountered during ballast water exchange need not be considered.

## Part 4, Chapter 8

### Container Ships

Effective date 1 July 2015

#### ■ Section 2 Materials

##### 2.3 Requirements for use of thick steel plates

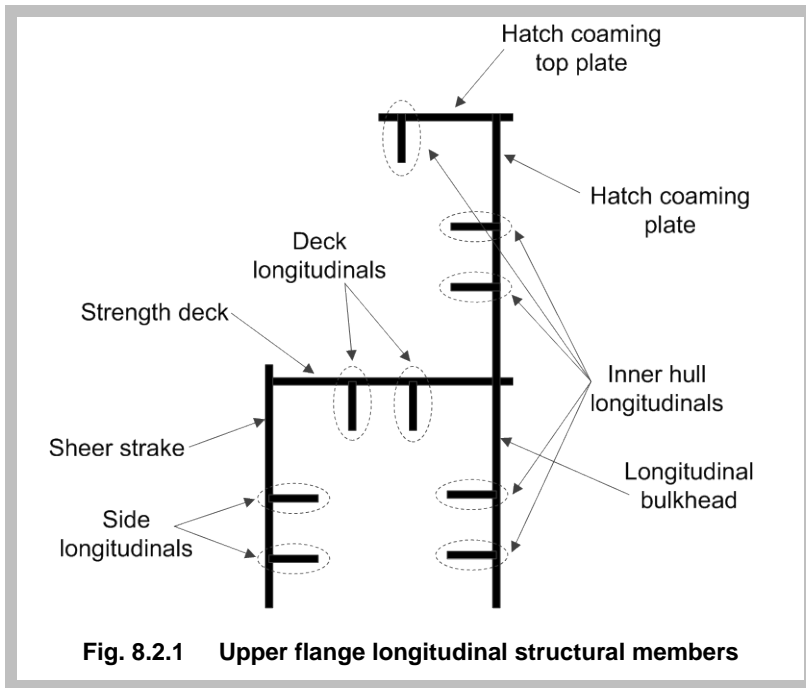
2.3.6 Where Measure 1 is required in Table 8.2.1, 100 per cent ultrasonic testing of all subject block-to-block welds is to be carried out in accordance with the requirements of Ch 13, 2.12 of the Rules for Materials. In accordance with Ch 13, 2.12 of the Rules for Materials, both application and acceptance criteria, is to be carried out on all block-to-block butt joints of all upper flange longitudinal structural members in the cargo hold region. Upper flange longitudinal structural members include the topmost strakes of the inner hull/bulkhead, the sheer strake, main deck, coaming plate, coaming top plate, and all attached longitudinal stiffeners. These members are defined in Fig. 8.2.1.

**Table 8.2.1 Preventive measures to be used in design and construction for thick steel plates**

Nominal yield strength (N/mm <sup>2</sup> )	Thickness (mm)	Measure		
		1	2 (see Note 1)	3 (see Note 1)
355	50 < t ≤ 85	Not required	Not required	Not required
	85 < t ≤ 100	Required	Not required	Not required
390	50 < t ≤ 85	Required	Not required	Not required
	85 < t ≤ 100	Required	Required (see Note 2)	Required
460	50 < t ≤ 85	Required	Required (see Note 2)	Required
	85 < t ≤ 100	Required	Required (see Note 2)	Required
<p>Key to measures:</p> <p>Measure 1: This measure is mandatory where required 'Required' is shown. 100% ultrasonic testing in accordance with Ch 13, 2.12 of the Rules for Materials, both application and acceptance criteria, is to be carried out on all block-to-block butt joints of all upper flange longitudinal structural members in the cargo hold region. Upper flange longitudinal structural members include the topmost strakes of the inner hull/bulkhead, the sheerstrake, main deck, coaming plate, coaming top plate, and all attached longitudinal stiffeners. see 2.3.6.</p> <p>Measure 2: Design based on crack arrest, see 2.3.7 and 2.3.8.</p> <p>Measure 3: Design based on crack initiation, see 2.3.14 2.3.12.</p>				
<p>NOTE</p> <p>1. Measure 2 or Measure 3 is to be applied where required 'Required' is shown.</p> <p>2. Brittle crack arrest steel to be applied for upper deck along the cargo hold region to prevent crack propagation from the coaming into lower structure.</p>				



## Part 4, Chapter 8

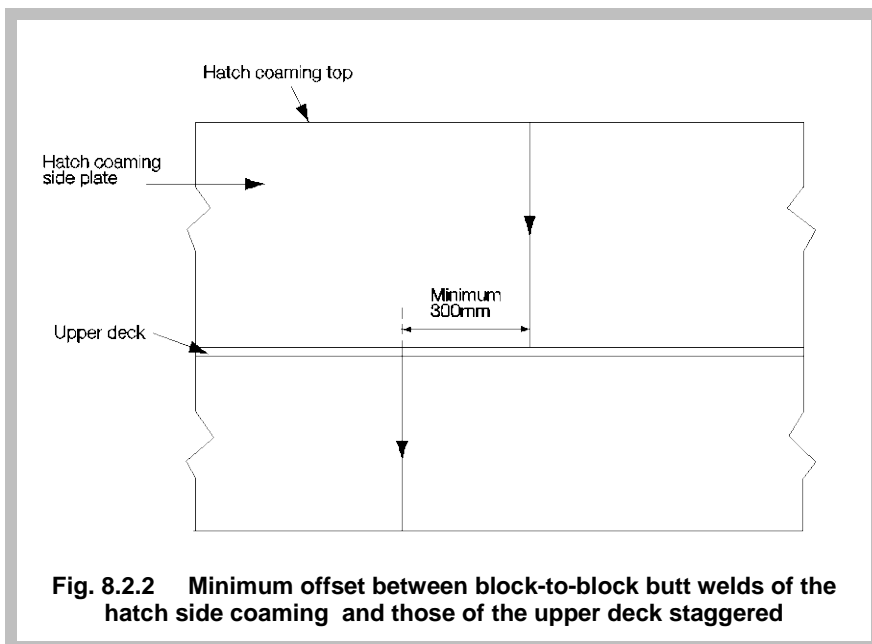


(Part only shown)

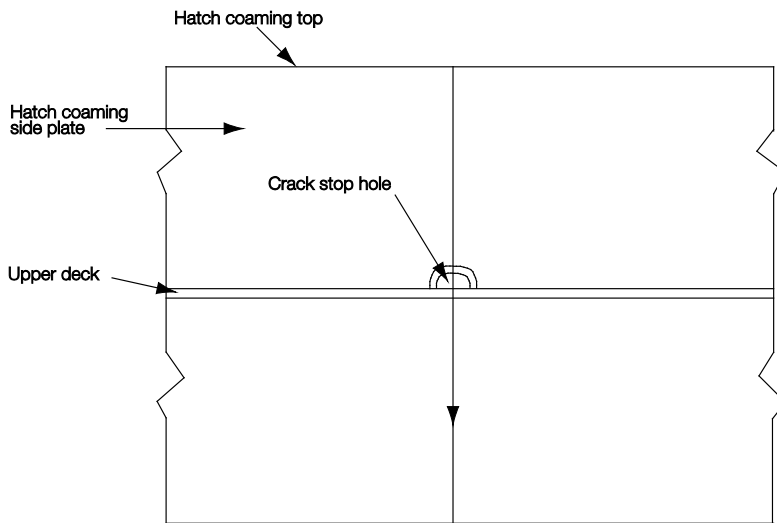
2.3.7 The following are considered to be acceptable examples of brittle crack arrest design for the case given in 2.3.4(a) and (b):

(a) Where the block-to-block butt welds of the hatch side coaming and those of the upper deck are staggered, this offset is to be greater than or equal to 300 mm. This offset distance is defined in Fig. 8.2.2. Brittle crack arrest steel, as defined in 2.3.9, is to be provided for the hatch side coaming.

(b) Where crack arrest holes are provided in way of the block-to-block butt welds at the region where the hatch side coaming weld meets the deck weld, see Fig. 8.2.3, the corners of the crack arrest holes located where the hatch side coaming joints meet the deck weld are to be specially assessed for fatigue strength. The fatigue strength is also to be assessed at the location where the block-to-block butt weld intersects the crack arrest hole. Brittle crack arrest steel, as defined in 2.3.9, is to be provided for the hatch side coaming.



## Part 4, Chapter 8



**Fig. 8.2.3 Crack arrest hole in way of the block-to-block butt weld at the region where hatch side coaming weld meets the deck weld**

2.3.8 For the case given in 2.3.4(c), brittle crack arrest steel, as defined in 2.3.9, is to be used for the upper deck along the cargo hold region to arrest a brittle crack initiating from the coaming plate and propagating into the structure below.

2.3.9 ~~Brittle crack arrest steel is defined as steel plate with measured crack arrest properties,  $K_{ca} \geq 6,000 \text{ N/mm}^{3/2}$  at  $-10^\circ\text{C}$  or other methods based on the determination of Crack Arrest Temperature (CAT). Where the thickness of the steel exceeds 80 mm the required  $K_{ca}$  value or alternative crack arrest parameter for the brittle crack arrest steel plate is to be specifically agreed with LR.~~ Brittle crack arrest steel is to be in accordance with the Rules for Materials, Ch 3.3.

2.3.11 As an alternative to 2.3.7, consideration may be given to the use of crack arrest steel in all the structural parts of the hatch coaming top, hatch coamings, upper deck and first strake below the upper deck.

*Existing paragraph 2.3.11 has been renumbered 2.3.12.*

~~2.3.12~~ 2.3.13 Table 8.2.1 summarises a selection of measures aimed at mitigating the risk of uncontrolled brittle fracture in way of deck and hatch coaming structure. A range of thicknesses is shown for the different strength grades of steel; where the maximum as-built thickness falls within this range, measures are to be selected as shown in the Table. If the as-built thickness of the hatch coaming structure is below the values contained in the Table, then additional measures are not necessary.

## Part 4, Chapter 9

### Double Hull Oil Tankers

Effective date 1 July 2015

#### ■ Section 1 General

#### 1.3 Class notation and applicable Rules for CSR Double Hull Oil Tankers

1.3.3 Materials are to comply with the *Rules for the Manufacture, Testing and Certification of Materials* (hereinafter referred to as the Rules for Materials). Corrosion protection is to comply with Pt 3, Ch 2.3 and Chapter 15 of the Rules for Materials.

~~1.3.8 Ships intended to carry heated cargoes are to comply with Section 12.~~

## Part 4, Chapter 9

### ■ Section 2 Materials and protection

#### 2.2 Corrosion protection coatings for salt-water ballast spaces

2.2.1 The requirements of Pt 3, Ch 2,3.6 and Chapter 15 of the Rules for Materials are to be complied with.

### ■ Section 12 Cargo temperatures

#### 12.2 Carriage Loading and carriage of heated cargoes

12.2.1 Where cargoes are to be loaded or carried at temperatures above  $T$  during the voyage  $80^{\circ}\text{C}$ , temperature distribution investigations and thermal stress calculations are to be submitted. These are to be carried out using the actual temperature of the cargo during the voyage and compared with calculations carried out for a cargo temperature of  $T$  highest cargo temperature during any part of the voyage, including loading and unloading. For the purpose of these calculations,  $T$  is to be taken as follows:

(a) Where longitudinal framing is adopted,  $T = 65^{\circ}\text{C}$ .

(b) Where transverse framing is adopted for the longitudinal bulkhead, inner hull and side shell,  $T = 80^{\circ}\text{C}$ .

#### ~~12.3 Loading of hot oil cargoes~~

~~12.3.1 Hot oil cargoes may be loaded at the permitted carriage temperature in 12.2.1 or the temperature given below, whichever is the greater, without the need for temperature distribution and thermal stress calculations, providing the temperature specified in 12.2.1(a) and (b) is not exceeded during the voyage:~~

~~(a)  $65^{\circ}\text{C}$  for sea temperatures of  $0^{\circ}\text{C}$  and below.~~

~~(b)  $75^{\circ}\text{C}$  for sea temperatures of  $5^{\circ}\text{C}$  and above.~~

~~(c) By linear interpolation between (a) and (b) above, for sea temperatures between  $0^{\circ}\text{C}$  and  $5^{\circ}\text{C}$ .~~

*Existing sub-Section 12.4 has been renumbered 12.3.*

## Part 4, Chapter 11

### Ore Carriers

Effective date 1 July 2015

### ■ Section 2 Materials and protection

#### 2.1 Materials and grades of steel

2.1.1 Materials, and grades of steel and protection of materials are to comply with the requirements of Pt 3, Ch 2 and the Rules for Materials.

#### 2.2 Corrosion protection coating for salt-water ballast spaces

2.2.1 The requirements of Pt 3, Ch 2,3.6 and Chapter 15 of the Rules for Materials are to be complied with.

## Part 7, Chapter 5

### Ships Equipped for Oil Recovery Operations

Effective date 1 July 2015

#### ■ Section 5

#### Electrical equipment

##### 5.6 Selection of electrical equipment for installation in hazardous areas

*(Part only shown)*

5.6.6 In spaces adjacent to tanks, as defined by 5.3.1(c), with no mechanical ventilation, only the following electrical equipment will be permitted:

- (f) Cables for impressed current cathodic protection systems (for external hull protection only) installed in heavy gauge steel pipes with gastight joints up to the upper deck; the arrangements are to comply with Pt 3, Ch 2,3.5.3 and Chapter 15 of the Rules for Materials.

## Cross-References

Section numbering in brackets reflects any Section renumbering necessitated by any of the Notices that update the current version of the Rules for Ships.

### Part 1, Chapter 3

- |                         |  |
|-------------------------|--|
| 1.6.5 <i>now</i> 1.6.10 | Reference to Part 1, Chapter 3, 1.6.6<br><i>now reads</i> Part 1, Chapter 3, 1.6.11  |
| 1.6.5 <i>now</i> 1.6.10 | Reference to Part 1, Chapter 3, 1.6.7<br><i>now reads</i> Part 1, Chapter 3, 1.6.12  |
| 6.3.2                   | Reference to Part 1, Chapter 3, 1.6.12 <i>now reads</i><br>Part 1, Chapter 3, 1.6.15 |
| 7.3.2                   | Reference to Part 1, Chapter 3, 1.6.12 <i>now reads</i><br>Part 1, Chapter 3, 1.6.15 |
| 8.3.2                   | Reference to Part 1, Chapter 3, 1.6.12 <i>now reads</i><br>Part 1, Chapter 3, 1.6.15 |
| 23.1.3                  | Reference to Part 1, Chapter 3, 1.5.28 <i>now reads</i><br>Part 1, Chapter 3, 1.5.29 |

### Part 4, Chapter 9

- |       |  |
|-------|--|
| 1.3.1 | Reference to Part 4, Chapter 9, 1.3.8 <i>now reads</i><br>Part 4, Chapter 9, 1.3.7 |
|-------|--|

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